
**PARAMETERS OF WATER QUALITY IN SOME CANALS (MAINLY THREE, LIKE -
IGNP, BHAKHARA & GANG CANAL) OF SRI GANGANAGAR & HANUMANGARH DISTRICT**

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ABSTRACT

Some canal is very essential for fauna and flora. In Sri Ganganagar district in Raj. Gang Canal IGNP (Indira Gandhi Nahar Project) and Bhakhra Canal are flowing. Water quality parameters of these canal like Gang Canal and IGNP Canal were analyzed in 2012. With the parameters the permissible limits, high values were noticed in some stations.

Water quality is necessary component for Biota. If water is non polluted then Biota are rich but if water is polluted then it direct bad impact on Biota.

Key words: Water quality, parameters, canal, Sri Ganganagar District

Introduction

IGNP (Indira Gandhi Nahar Project) is an excellent example of courageous fight of man against odds of nature. Aim of this ambitious project is to irrigate the thirsty desert land of Western Rajasthan with Himalaya's water and provide drinking water to crores of inhabitants of this area. Origin of this canal is from Harike barrage situated in Punjab. From Harike, 204 Km. long Indira Gandhi Feeder off-takes, which has 170 Km. length in Punjab & Haryana and balance 34 Km. in Rajasthan. This canal enters in Rajasthan at Hanumangarh. From tail of Indira Gandhi Feeder 445 Km. long Indira Gandhi Main Canal starts which passes through Sri Ganganagar and Bikaner districts and ends at Mohangarh in Jaisalmer.

The Bhakra Nangal system is a complex system of several dams, reservoirs, inter-basin transfer linkages, powerhouses and a vast canal network. Sutlej waters were distributed between Punjab and Rajasthan as per the Bhakra Nangal Agreement 1959 with Rajasthan's entitlement at 15.22 percent. 49 percent of the project's canal command area (CCA) is in Haryana, 35 percent in Punjab, and 16 percent in Rajasthan. Only two districts of Sriganganagar and Hanumangarh are covered by the project.

Gang Canal -The 114 km-long Gang Canal was the rst to come into existence and became fully operational in 1928, with a 1,251 km long distribution system to serve Sri Ganganagar district along with the Bikaner feeder.

For earth water cycle are an important and essential part of it. Canal man made eco-system. I provide irrigation water, transportation hydro electrical power drainage, recreation opportunities but in best quantity it provide food. Aquatic fauna and flora mostly used by Human being. The present work on the examine the water quality parameter of the canals IGNP (Indira Gandhi Nahar Project), Bhakhara and Gang Canal of Sri Ganganagar district of Rajasthan in 2013-14.

Materials and Methods

Study Area

Water sample were collected from the canals IGNP, Bhakhra and Gang Canal different station during Pre Monsoon and Post Monsoon season in 2013-14. The month of April to October and November to January were considered as per monsoon and post monsoon respectively the physiochemical parameters like pH, conductivity, CO_2 , dissolve O_2 , Alkalinity, Chloride and Hardness of water were analyzed as per standard method.

Results and Discussion

pH the full form potential of hydrogen. Basically pH is a measure of the hydrogen ion (H^+) concentration and the pH scale shows the intensity of the basic acidic character of a solution at given standard temperature the reason alkalinity is some time confused with pH. Because the term alkaline is used to describe pH condition, greater then 7 (basic) the most important compound in water that determine alkalinity include the carbohydrate and bicarbonate carbonate iron are able to react with an neutralize two Hydrogen ions and the bicarbonate ions are able to neutralpe H^+ or OH^- present in water. The alkalinity depend on rains but in seasonal alkalinity values registered during pre monsoon period. 72 to 198 mg/liter and 63 to 212 mg/liter during post monsoon period. We can say that alkalinity is very less in all stations. The max. seasonal value 212 mg/liter was registered at from all stations during monsoon.

But the alkalinity values are high in post monsoon period ranged 62 to 212 mg/litre. this may be due to the sewage and waters which are flowing into the canals. Samples of industrial and agricultured areas showed alkalinity and some residential areas also indicated alkalinity. As per the Bureau of Indian standard the desirable level of total alkalinity for drinking water is below 200mg/liter. The observed values in this study was under the permissible limit.

DO

The dissolve oxygen is necessary for aquatic life. The DO is in the IGNP canal ranged between 0 to 5.8 mg/litre. In Bhakhara DO ranged between 5.8 to 7.2 mg/litre. In Gang Canal the DO ranged between 1.25 to 7.5 mg/litre. The content of DO at all the stations was higher during Monsoon Period. Dissolve oxygen low and high effective by the rain water.

Chloride

The Chloride of sodium, potassium, calcium and Mg are highly soluble in water the concentration of Chloride in Canal IGNP is between 14 to 40 mg/litre. In canal Bhakhara it rangers between 18 to 23.8 mg/litre. during post monsoon period and in gang canal between 14 to 19 mg/litre. In the present study the highest value of 45 mg/litre reported at station three during monsoon may be due to influence of mass bathing and cleaning clothes. But we can say it is in limit in water of canals. Calcium and magnesium ions are the most common factors that comprises hardness. It usually determines both ions in the form of "total hardness" actually total Hardness of water expression of concentration of the divalent ions in mg/litre (PPM). The values fluctuated between 80 to 189 mg/litre in IGNP canal in Bhakhara Canal hardness fluctuated between 80 to 104 mg/litre. Gang Canal hardness mostly found between 72 mg/litre to 85 mg/litre. In present study comparatively max. hardness value of 190 mg/litre was observed at three station. The observed hardness of canal water was withing the permissible limit of 300 mg/litre.

Carbon-di-oxide

CO₂ is present in all surface of shallow water generally less than 10 mg/litre. However higher concentration are not uncommon in ground water. High concentration of CO₂ are corrosive and have been known to kill fish the amount of CO₂ fluctuated from 2.4 mg/litre to 42 mg/litre during monsoon season and the 5 to 47 mg/litre during post monsoon season. The maximum seasonal values observed at three station during post monsoon season. The maximum seasonal values observed at IIIrd station. In the present study the concentration of CO₂ observed are very low due to its lentic and oligotrophic nature. Due to sand mining the water of the canal is always turbid hence the photosynthetic effect would not make glaring utility of CO₂.

Result

Result of the present work give this indication that significant variation in the physio-chemical parameters in the all. These canal water systems. The investigation reveals that the quality of canal water at these station is found to be safe and can be used for the domestic purpose without any treatment.

Conclusion

Table – 1 Physio-Chemical Parameters of the Canal 1. IGNP 2. Bhakhara 3. Gang Canal During Monsoon Period

Canal	No.	pH	Alkalinity	DO	Cl	Hardness	CO ₂
IGNP	1	7.5	72	5.8	14.8	80	6.1
	2	8.2	75	6.4	16.7	9.8	3
Bhakhara	3	6.2	201	7.1	15.5	100.8	0
	4	8.6	210	8.9	14.9	70	6.1
Gang-Canal	5	8.4	74	7.2	18.19	85	6.8
	6	7.3	212	7.5			

Table – 2 Physio-Chemical Parameters of the Canal I, II, III During Post Monsoon Period

Canal	No.	pH	Alkalinity	DO	Cl	Hardness	CO ₂
IGNP	1	8.97	75.1	9.9	12.2	70.9	5.9
	2	8.12	72	10.1	15.1	70.5	6.1
Bhakhara	3	5.84	76	5.8	16.5	90.8	3
	4	7.65	180	8.6	14.8	100.5	1.1
Gang-Canal	5	6.98	78	7.5	18.9	75	6.9
	6	5.98	96			85.2	5.8

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